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EXAMINER	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MELISSA LEE MERLAU, ALAN ISAMU NAKATANI,
CURTIS SCHWARTZ, and FANWEN ZENG

Appeal 2009-005062
Application 10/702,361
Technology Center 1600

Decided: September 15, 2009

Before TONI R. SCHEINER, FRANCISCO C. PRATS, and
MELANIE L. McCOLLUM, *Administrative Patent Judges*.

SCHEINER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 1 and 7, directed to a hair styling composition. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

STATEMENT OF THE CASE

Polymers with high glass transition temperatures (Tg) are typically used in hair styling compositions because they generally impart good hold, high resistance to humidity, and low tackiness to the composition, but they also have drawbacks, as they form films that are extremely hard and brittle (Spec. 1: 22-26). Lower Tg polymers, on the other hand, do not become brittle, but they generally form weak films that are tacky and have poor holding power and resistance to humidity (*id.* at 1: 31 to 2: 2).

According to the Specification, previous attempts to produce styling compositions with the advantages of high and low Tg polymers, without the drawbacks, have involved "incorporating into the polymer blocks or grafts made utilizing different monomers to give a polymer with distinct regions having differing properties. In effect, . . . creat[ing] a single polymer with high Tg regions and low Tg regions" (Spec. 2: 10-13).

The present invention, in contrast, is directed to a composition comprising a mixture of individual polymers or copolymers - at least one with a high Tg, and at least one with a low Tg. According to the Specification, the compositions "provide[ ] flexibility and durability to a hair style while retaining other beneficial hair fixative properties, particularly low tackiness" (Spec. 2: 16-17). When dried, the compositions "provide non-tacky flexible, tough, elastic films wherein the films have a yield stress, below which they display elastic behavior and above which they display ductile behavior" (*id.* at 2: 31-33).

Claims 1 and 7 are pending and on appeal. Claim 1 is representative:

1. A composition comprising:

a) a first polymer or polymer mixture with a glass transition temperature ("Tg") from 75° C to 130° C;

b) a second polymer or polymer mixture with a Tg from 20° C to 35° C; and

c) one or more cosmetically acceptable solvents;

wherein when the first polymer or polymer mixture and the second polymer or polymer mixture are dissolved together in a cosmetically acceptable solvent, which may be the same as or different than the solvent in c), and then dried to form a film, the film has a tensile storage modulus at 20° C of from 1 x 10^{10} Pascal to 1 x 10^{8} Pascal and a storage modulus at 70° C of from 1 x 10^{9} Pascal to 1 x 10^{6} Pascal; and

wherein the first polymer and the second polymer are independently selected from block, graft, and branched homopolymers and copolymers derived from one or more monomers selected from methacrylic acid; acrylic acid; methacrylate esters, acrylate esters, styrene, substituted styrenes, vinyl esters of organic acids, N-vinyl compounds, acrylamide; methacrylamide; substituted acrylamides, amine-functional acrylamides, substituted methacylamides; hydroxylalkyl methacrylaides; hydroxylalkyl acrylates, dienes, vinyl ethers, acid containing monomers, and functional monomers selected from maleic acid, maleic anhydride, fumaric acid, α-methylene glutaric acid, itaconic acid, itaconic anhydride, citraconic acid, mesaconic acid, cyclohexenedicarboxylic acid, 2-acrylamido-2-methylpropanesulfonic acid, monoacryloxyethyl, and water soluble salts thereof.

The Examiner relies on the following evidence:

Rollat	US 2003/0147833 A1	Aug. 7, 2003
Rollat	US 2004/0057923 A9	Mar. 25, 2004

The Examiner rejected claims 1 and 7 under 35 U.S.C. § 103(a) as unpatentable over Rollat '833 or Rollat '923.[1]

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[1] The portions of Rollat '923 and Rollat '833 relied on by the Examiner are virtually identical, so we will limit our discussion to Rollat '923, with the understanding that it applies equally to Rollat '833.

ISSUE

The issue raised by this rejection is whether the Examiner has established that one skilled in the art would have had a reason to combine a first polymer with a relatively high glass transition temperature (Tg) (75° C to 130° C), a second polymer with a relatively low Tg (20° C to 35° C), and a solvent, to form a composition which dries to a film with a specific tensile storage modulus, based on the teachings of Rollat '923 or Rollat '833.

FINDINGS OF FACT

FF1 Claim 1 is directed to a composition comprising a first polymer with a glass transition temperature (Tg) from 75° C to 130° C, a second polymer with a Tg from 20° C to 35° C, and a cosmetically acceptable solvent, with the proviso that the first and second polymers, when dissolved together in a solvent and dried, form a film with a tensile storage modulus at 20° C of from 1 x 10^{10} Pascal to 1 x 10^{8} Pascal and a storage modulus at 70° C of from 1 x 10^{9} Pascal to 1 x 10^{6} Pascal. The first and second polymers are independently selected from block, graft, and branched homopolymers and copolymers derived from monomers including methacrylate monomers.

FF2 Rollat '923 describes a hair styling composition comprising:

> [A]t least one (meth)acrylic copolymer, wherein the at least one (meth)acrylic copolymer comprises: (a) units derived from at least one monomer chosen from butyl (meth)acrylate monomers, (b) units derived from at least one monomer chosen from hydroxy alkyl (meth)acrylate monomers, and (c) optional units derived from at least one co-polymerizable monomer other than said (a) and (b) monomers, wherein said composition provides a reshapable effect . . .

(Rollat '923 ¶ 5).

FF3 The Examiner finds that Rollat '923 "do[es] not teach the at least one (meth)acrylic copolymer with a Tg of 20-35°C or a film of specific tensile strength modulus," but does teach a (meth)acrylic copolymer in claim 20 with "a Tg from about -100°C to about 15°C" (Ans. 5). The Examiner further finds that "a Tg of about 15°C . . . reads on the instant claim 1 of Tg of 20°C" (*id.*).

FF4 Rollat 923's composition may further comprise "at least one constituent known in the cosmetic arts that does not substantially interfere with the reshapable properties of the at least one (meth)acrylic copolymer" (Rollat '923 ¶ 50).

> Such constituents may be chosen from, but are not limited to: reducing agents (such as thiols); silanes (such as aminopropyl triethoxy silane); fatty substances; thickeners; plasticizers; anti-foaming agents; hydrating agents; fillers; sunscreens (such as UV filters); active haircare agents; perfumes; preservatives; cationic, anionic, nonionic, and amphoteric (such as zwitterionic) surfactants; *cationic, anionic, nonionic, and amphoteric (such as zwitterionic) polymers other than polymers of the invention*; polyols; proteins; provitamins; vitamins; dyes; tints; bleaches; and pH adjusting agents. The compositions may also contain a conditioning agent such as, for example, such as silicones, fatty esters, fatty alcohols, long chain hydrocarbons, emolients, lubricants, polymers, surfactants, lanolin compounds, ceramides, proteins, protein hydrolysates, and other protein derivatives.

(*Id.* (emphasis added).)

FF5 Of the hundreds of optional cationic, anionic, nonionic, and amphoteric polymer constituents disclosed in ¶¶ 52-188 of Rollat '923, the Examiner has identified a dozen or so that have glass transition temperatures between 75° C and 130° C (Ans. 4). Rollat doesn't actually disclose the

glass transition temperatures for any of these optional constituents, but Appellants do not dispute the Examiner's finding.

PRINCIPLES OF LAW

"[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007). However, "[w]e must still be careful not to allow hindsight reconstruction of references to reach the claimed invention without any explanation as to how or why the references would be combined to produce the claimed invention." *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1374 n.3 (Fed. Cir. 2008).

A rejection for obviousness must include "articulated reasoning with some rational underpinning to support the legal conclusion." *KSR*, 550 U.S. at 418, quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). And, "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *Id.*

ANALYSIS

The Examiner finds that Rollat's (meth)acrylic copolymers, with glass transition temperatures ranging between about -100° C and about 15° C, read on the "second polymer or polymer mixture with a Tg from 20° C to 35° C" required by claim 1 (Ans. 5; FF3). The Examiner also finds that some of the hundreds of optional constituents of Rollat's compositions are cationic, anionic, nonionic, and amphoteric polymers with glass transition temperatures falling between 75° C to 130° C (FF5), the range specified for the "first polymer or polymer mixture" required by claim 1.

The Examiner concludes that it would have been obvious for one of ordinary skill in the art "to look to [Rollat] '923 and '833 for a composition with cosmetically acceptable vehicle, at least one (meth)acrylic copolymer, and a second polymer for hair styling" (Ans. 5). The Examiner's position is that "[o]ne of ordinary skill in the art would know how to optimize the ranges of the Tg for the at least one (meth)acrylic copolymer . . . . [and] would know how to obtain a specified glass transition phase given workable ranges of the monomers disclosed in [Rollat] '923 and '833" (*id.*), both of which "teach that the hair styling composition is 'reshapable'" (*id.*).

We do not agree with the Examiner's rationale and conclusion. The Rollat references teach that (meth)acrylic copolymers with glass transition temperatures below the range required for either the first or second polymer in the claimed composition provide a "reshapable" hair styling composition. A multitude of optional constituents "known in the cosmetic art" may be added to Rollat's compositions, with the only meaningful restriction being that the cosmetic constituent "does not substantially interfere with the reshapable properties of the at least one (meth)acrylic copolymer" (FF4). While the Examiner finds, and Appellants do not dispute, that some of Rollat's optional constituents have glass transition temperatures that fall within the range required for the first polymer of the claimed composition (FF5), there is nothing in the references that directs attention to those particular polymers, and certainly nothing to suggest that a composition with the particular film forming properties required by claim 1 could be obtained by combining those polymers with a polymer with a Tg between 20° C and 35° C.

We find that the Examiner has not provided an adequate explanation as to how or why one of skill in the art would be led to combine the various constituents disclosed in the Rollat references to produce the claimed composition.

CONCLUSIONS OF LAW

The Examiner has not established that one skilled in the art would have had a reason to combine a first polymer with a relatively high glass transition temperature (Tg) (75° C to 130° C), a second polymer with a relatively low Tg (20° C to 35° C), and a solvent, to form a composition which dries to a film with a specific tensile storage modulus, based on the teachings of Rollat '923 or Rollat '833.

Accordingly, the rejection of claims 1 and 7 as unpatentable over Rollat '923 or Rollat '833 is reversed.

REVERSED

SSC:

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